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The relationship delay in referral with maternal mortality Dr. M. Djamil central general hospital Padang

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Abstract

Introduction: Maternal mortality is maternal death during pregnancy, childbirth, and 42 days after delivery. Maternal Mortality Rate (MMR) is the number of maternal deaths per 100,000 live births. There was an increase in MMR in Indonesia on 2012 compared to 2007 which is 228 per 100,000 population. There were 17 maternal deaths at Dr. M. Djamil Hospital throughout 2019. Delay in referral can cause death for both mother and infant

Objectives: This study aims to determine the relationship between delay in referral and maternal mortality in obstetric emergencies that came to the emergency unit at Dr. M. Djamil Hospital, Padang.

Methods: This study used a cross-sectional comparative study design conducted on 90 pregnant women who visited Dr. M. Djamil Padang Hospital from January - February 2021. All data were then analyzed using univariate and bivariate analysis with appropriate statistical tests.

Results: The mean age of the study subjects was 25.34 ± 5.99 years old with 12.21% of sample were nullipara, 21.27% primipara, 61.83% multipara, and 4.58% grande multipara. From the questionnaire, 54.3% were late to refer. From the medical records, it was found that in the group who died, 94.5% experienced a delay in referral and bivariate analysis showed a relationship between late referral and maternal mortality ($p = 0.000$).

Conclusion: There is a significant relationship between late referral and maternal mortality at Dr. M. Djamil Central General Hospital Padang

Keywords: Maternal Mortality Rate; late referrals; pregnant women

INTRODUCTION

Maternal mortality Rate (MMR) in Indonesia is still a major problem in the health sector. The maternal mortality rate in Indonesia is still relatively high and has not yet reached the target set out in the Millennium Development Goals (MDGs) which is to reduce three-quarters of the MMR worldwide before 2015.¹ Overall pregnancy in the world, estimated morbidity and mortality occur in 20 million women, life-threatening complications in about 8 million



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women, and in 1995 around more than 500,000 people died. Developing countries such as countries in the south, southeast Asia region, and including Indonesia contributed about 240,000 or about 50 percent of cases.²

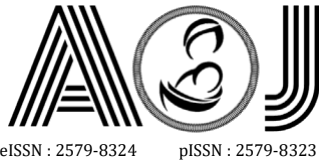
Indonesia is one of the countries experiencing problems in the field of maternal and child health. The high maternal mortality rate (MMR) and infant mortality rate (IMR) are indicators of maternal and child health services. The increase in MMR in Indonesia in 2012 compared to 2007, which was 228 per 100,000 population. This value is away from the target to be achieved, namely 102 per 100,000 live births which is the target of the Millennium Development Goals (MDGs) in 2015 (Pusdatin, 2014). Pregnancy is a significant contributor to mortality for women of reproductive age. 3 The 2012 survey showed that the MMR in Indonesia was very high, at 359 per 100,000 live births. The Faculty of Medicine, Andalas University conducted a MMR survey in West Sumatra in 2008 and found 212 cases per 1000 live births. At Dr. M. Djamil Central General Hospital throughout 2019 there were 17 maternal deaths.^{3,4,5}

On the other hand, the condition after delivery is the most common cause of maternal death, including bleeding (28%), infection (11%), postpartum complications (8%), prolonged labor (5%), abortion (5%), trauma (5%), embolism (5%), and others.^{6,7}

Apart from secondary health services, RSUP DR. M. Djamil also received referrals from the Primary level, namely the Primary Health Center for Obstetrics and Neonatal Services/Basic Emergency (PONED). PONED Puskesmas in cases with obstetric and neonatal emergencies must carry out procedures in accordance with the National Reference for Maternal and Neonatal Health Services. In the context of efforts to reduce MMR, the maternal referral process is an important process chain.⁸ The decision to make a referral to the Essential/Comprehensive Emergency Obstetrics and Neonatal Service (PONEK) for further services is based on the patient's emergency level, or managed at the PONED Puskesmas level. This can be done after stabilizing the patient. Avoid delaying the risks that threaten the mother and fetus, so referrals must be made quickly and accurately. In a study conducted by Yanti (2014) on the referral process from one of the PONED health centers to the PONEK Hospital in the city of Padang, it was explained that both parties had not utilized the referral communication system, so that an effective and efficient referral had not been achieved.⁹

One of the problems in implementing the referral system, among others, is the limited resources and important infrastructure in health services to carry out minimal services. The slow response time will endanger the patient's life. Standard Operating Procedures should also be performed in all referral cases, including Comprehensive and Basic Neonatal Emergency Obstetrics Services hospitals.^{9,10,11}

The referral system and prevention of the occurrence of 3T factors will not run smoothly without the participation of the family or mother (client) itself starting from making decisions about the mother (client), recognizing danger signs, preparing transportation needed to reach health facilities, have the client have health insurance, perform routine pregnancy check-ups



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and obtain Communication, Information and Education during antenatal care (ANC), perform complete blood tests to detect disease early and make sure the mother knows her own blood type.^{10,12,13}

Feedback on referral letters, limited supporting examination services, Human Resources (HR), facilities and infrastructure, complicated referral procedures based on the bureaucracy of referral criteria by the Health Insurance Administration Agency, lack of knowledge related to maternal and neonatal emergencies, delays decision-making, untrained medical personnel who receive patients, and procedures for actions carried out between service providers who do not have the same perception are some of the problems that have a negative impact on the implementation of referrals at each level of health care, especially maternal and neonatal referrals.^{14,15}

Based on the explanation above, the researcher wanted to know the relationship between late referral and maternal mortality in obstetric emergency cases who were referred to the emergency department of M. Djamil General Hospital Padang as information regarding the implementation of a referral system for future obstetric emergencies.

METHODS

This type of research is analytic with a cross-sectional comparative study design. The study was carried out from January to February 2021. The research data was obtained by taking secondary data from the medical records of pregnant women who were referred to Dr. M. Djamil Central General Hospital Padang City during the period January – February 2021.

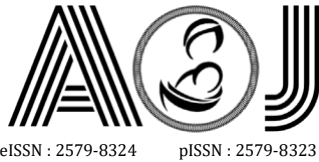
The population of this research is patient pregnant women who are referred to Dr. M. Djamil Central General Hospital Padang City period January – February 2021. The selected research sample is part of the research population that meets the criteria with a random sampling technique *consecutive random sampling*, that is as many as 45 people in each group of patients with delayed referral and without delayed referral with a total sample of 90 patients. Subject inclusion criteria were all pregnant women who were referred to Dr. M. Djamil Central General Hospital Padang City.

The data were statistically analyzed which was assessed using a computerized systems namely univariate and bivariate analysis. Univariate analysis was conducted to see the frequency distribution of each independent variable and dependent variable. Bivariate analysis was carried out using the chi-square test and it was said that there was a significant relationship if the p value <0.05 was obtained.

RESULTS

Characteristics of Research Subjects

This research was conducted on respondent patients referred to Dr. M Djamil Central General Hospital Padang. Questionnaires were used to assess decision making, health



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facilities, delay in referrals and maternal mortality. 131 research samples have been collected. The following are the results of the research that has been carried out:

Table 5.1 Age of Research Respondents

Parameter	Minimum	Maximum	mean	SD
Age (years)	18	45	25.34	5,990

Based on table 5.1, it was found that the age of the youngest respondents was patients who were referred by Dr. M. Djamil Central General Hospital Padang, namely the youngest age is 18 years and the oldest age is 45 years, with an average age of research respondents 25.34±5.99 years

Table 5.2 Parity of Research Respondents

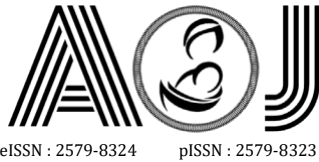
parity	f	%
nullipara	16	12.21
Primipara	28	21.27
Multipara	81	61.83
Grande Multipara	6	4.58
Amount	131	100.0

Based on table 5.2, it was found that the respondents of patients referred to M Djamil Central General Hospital Padang with nulliparous status were 16 people (12.21%), primiparas 28 people (21.27%), multiparas 81 people (61.83.8%), and Grande multipara 6 people (4.58%)

Table 5.3 Delay in Referral

Reference	f	%
Late	72	54.3
Not late	59	45.7
Amount	131	100.0

Based on table 5.3 it was found that patient respondents who experienced delays in



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referrals at Dr. M. Djamil Central General Hospital Padang as many as 72 people (54.3%) and there was no delay in referral of 59 people (45.7%).

The Relationship of Delay Referral With Maternal Death

The relationship between delay referral and maternal mortality that the percentage of those who died was higher in late referral respondents compared to those who were not late, namely 5.5% compared to 0%. Statistically, there was a significant relationship between delay in referral and maternal mortality ($p < 0.05$).

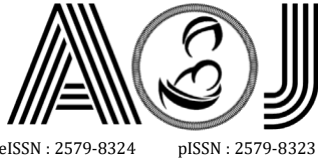
DISCUSSION

In this study, 131 research subjects were collected, with 18 years old and the oldest age at 45 years old, with the average age of the research respondents 25.34 ± 5.99 years. The mean number of parities is 2.01 ± 0.53 . It was found that there were still pregnant women with gestational ages outside the ideal gestational age range of 20-35 years and, besides that, there were still grande multiparas in the research subjects. Grande multipara pregnancies often experience complications such as position abnormalities, antepartum bleeding, post partum bleeding and so on because the elasticity of the uterine muscles is reduced, causing uterine atony.

Maternal age who is too young (< 20 years) during pregnancy is closely related to the risk of defects in the fetus due to immature eggs, premature birth due to various factors, including the immaturity of the reproductive organs, especially the uterus that is not ready for a pregnancy process, low birth weight (LBW) is also influenced by poor nutrition during pregnancy and also the age of the mother who has not yet reached 20 years. Congenital defects are influenced by the mother's lack of knowledge about pregnancy, knowledge of low nutritional intake, lack of antenatal care (ANC), the psychological state of the mother is less stable^{14,15}

Maternal gestational age who is too young is also at risk of experiencing difficulties in childbirth due to not yet strong uterine muscles and labor difficulties. Meanwhile, gestational age that is too old (> 35 years) increases the risk of eclampsia in the mother. 91 (79.1%) study subjects did not experience delays in referrals and 24 (20.9%) study subjects experienced delays in referrals. According to WHO (2019) in 2017, there were 295,000 maternal deaths per year due to complications of pregnancy and childbirth. Southeast Asia accounts for up to a fifth of the maternal mortality rate, which is 58,000 deaths. The main complications that cause maternal death are bleeding, infection, high blood pressure during pregnancy and childbirth complications¹⁵

Research in Jharkhand, India, states that delay in referral results in 65% of maternal deaths due to pregnancy complications. Of these cases, due to the length of time required to refer (2-7 days), only 60% of mothers who experienced pregnancy complications decided to seek treatment. Of the 60%, only 28% seek medical help at a health facility. In Indonesia itself,



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Researcher at the Center for Health Policy and Management, Faculty of Medicine Universitas Gadjah Mada, Prof. dr. Laksono Trsinantoro, M.Sc., Ph.D., said that 60 percent of maternal deaths are generally caused by delays in referrals.^{16,17}

The high MMR is an indicator of the low health status of pregnant women and the high risk of pregnancy and childbirth which will affect the quality of the next generation being born, so efforts to accelerate the decline in MMR are important and need serious attention. Various determinant factors also play a role in the process of maternal mortality. Three models of delay in referring mothers to referral health facilities (three delay models) are determinants that have a large enough role in the occurrence of maternal mortality in the community. This factor is an indirect cause, but is a fundamental cause of maternal mortality.¹⁷

The first delay in referring that must be prevented immediately so as not to cause subsequent delays, namely being late in making family decisions and being late in recognizing danger signs in pregnancy, in addition to other determinants such as factors for prenatal care and first aiding factors for childbirth that are not carried out by health workers.¹⁸

On In this study, three factors were investigated through questionnaires which from previous scientific publications were known to be associated with maternal mortality, namely (1) Referral decision making; (2) Facilities at health facilities; (3) Late arrival^{19,20}

Regarding referral decision making, it was found that for knowledge items related to pregnancy emergencies, 70% percent of research subjects stated that cost was one of the obstacles in making referral decisions.²¹ The results of this study indicate that decision making is not an obstacle for referrals to pregnant women. When compared with research by Bata et al. (2019), where the research was conducted in Wanukaka Sumba which is a district with the 3T category (underdeveloped, outermost, remote) in Indonesia, the achievement of maternal and child health service indicators has not met the standard with a tendency for maternal mortality to increase in the last 2 years. The decision making in referring is dominated by the husband. Barriers to the referral process include not having a vehicle, long distances and difficult road access, low economic status, and community traditions have a high level of dependence on others so that maternal health status with complications is not a priority for husbands. The husband's occupation as farm laborer and sailor makes the husband not at home/close to his wife for a long period of time so that it affects the maternal referral decision-making process.¹⁹

This is related to the level of education of the mother. Women with low levels of education cause their lack of understanding of the dangers that can befall pregnant women, especially in the case of emergency pregnancy and childbirth. This affects awareness and ability to make decisions. Women with low education have low independence in decision making. The low level of knowledge supported by low decision-making ability affects the mother's ability to access quality services so that she tends to obey her family or the surrounding environment. This is different from women with higher education who tend to



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pay more attention to the health of themselves and their families and have high independence in making decisions related to their health and safety.²⁰

Regarding the facilities at health facilities, it was found that more than 80% of the research subjects stated that the facilities at health facilities where pregnancy check-up can handle emergencies and have complete referral facilities. Health facilities are still very minimal resulting in very limited health services to the community. At the Coordination Meeting on policies for dealing with health problems in Kupang, it was said that there are several reasons for the high maternal and infant mortality rate, including geographical conditions and the distance between people's residences and health services. In addition, the majority of deliveries are also not carried out in health facilities, but are carried out at home and assisted by traditional birth attendants. In addition, not all sub-districts have inpatient health centers and not all villages have adequate health facilities. Service to the patient's family is still very minimal. This can be seen from the unavailability of waiting houses around the Puskesmas. Another problem is the uneven distribution of medical and non-medical personnel and limited resources such as personnel, funds, methods, facilities and infrastructure to support health services.²²

Research by Sumarni & Anasari shows the relationship between community factors (availability of transportation) and delays in referrals in cases of maternal mortality. It shows that late referrals are more common in people with available transportation facilities such as village ambulance cars (68.3%), as well as in late referrals are also more common in people with available transportation at 93.3%.²⁰

The obstacle in referral is delay. More than 50% of the subjects stated disagree regarding referral health facilities can be reached in less than 30 minutes of travel. The golden period for referral for complications of pregnancy is 30 minutes to one hour.⁸

Research by Baiti and Cahyanti (2018) related to the quality of referrals for pregnant women with preeclampsia/eclampsia at the Obstetrics-Gynecology ER, Dr. Kariadi Semarang found that the referral procedure aspect was assessed from the results of good pre-referral stabilization, including fast and precise administrative processes, use of ambulances, financing with health insurance and introductory data²³. However, there are still problems related to the daily costs of the family waiting for the patient while in the hospital.

The results of the bivariate chi-square analysis showed that there was a significant relationship between referral decision making, health facilities at health facility and delay arrival with maternal mortality. This finding is in line with Sumarni & Anasari (2014) where decision making, health facilities and late arrival are factors that influence maternal mortality.²¹

The paradigm shift is waiting for complications to occur and then dealing with them is to prevent complications that can bring health improvements for mothers in Indonesia. This adjustment is very important in an effort to reduce maternal and newborn mortality because most deliveries in Indonesia still occur at the primary health care level where the skill and



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knowledge level of health workers in these service facilities is still inadequate. Early detection and prevention of complications can reduce maternal and newborn morbidity and mortality, if all birth attendants are trained to be able to prevent or early detection of complications that may occur, is an effective and timely delivery care, either before or when the problem occurs and immediately make a referral when conditions are still optimal, then the mothers will avoid the threat of illness and death.²³

The results showed that the ability of midwives in early detection of risky pregnancies was an important factor in reducing maternal mortality. Responding to changes in the environment and technology as well as the increasingly complex problems in the field of midwifery, the government needs to prepare human resources, especially midwives, because midwives as the spearhead of MCH services are the first to play an important role in reducing the adverse effects of high-risk pregnancies.²³

The maternal and neonatal emergency referral system has the main principles of speed and accuracy of action, efficient, effective, and in accordance with the ability and authority of service facilities. The public can immediately take advantage of all obstetric and neonatal service facilities, according to the patient's condition. Trained midwife was placed in each village can provide direct services to pregnant women, maternity mothers, postpartum mothers, newborns, whether they come alone or at the referral of cadres or the community. Village midwives or private practice midwives provide normal delivery services, and manage certain cases according to their authority and ability, or make referrals to public health centers, Basic Neonatal Emergency Obstetrics Services in public health centers, and Comprehensive Neonatal Emergency Obstetrics Services in hospitals according to the appropriate level of service. Non-Basic Neonatal Emergency Obstetrics Services Public Health Centers or also known as Basic Neonatal Emergency Obstetrics Services in network health centers provide services according to their authority and must be able to stabilize patients with emergencies before making referrals to Basic Neonatal Emergency Obstetrics in Services Health Centers or Comprehensive Neonatal Emergency Obstetrics Services in Hospitals. The Basic Neonatal Emergency Obstetrics in Public Health center has the ability or makes referrals to the Comprehensive Neonatal Emergency Obstetrics in Hospital. The 24-hour Comprehensive Neonatal Emergency Obstetrics in Hospital has the ability to provide direct Comprehensive Neonatal Emergency Obstetrics in services to pregnant, maternity, postpartum, BBL women who come alone or at the referral of cadres, the community, village midwives, BPS, public health center and Comprehensive Neonatal Emergency Obstetrics in Health Centers.²³

CONCLUSION

Based on the results of the research and discussion that have been described previously, the following conclusions can be drawn: (1) Characteristics of pregnant women with cases of delayed referral in cases referred to Dr. M. Djamil Central General Hospital



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Padang, based on the youngest age of 18 years and the oldest age of 45 years, with the highest parity being multipara; (2) Patients who are referred to Dr. M. Djamil Central General Hospital Padang is mostly included in the criteria for lateness; (3) There were cases of death in patients who were referred to Dr. M. Djamil Central General Hospital Padang; (4) There is a significant relationship between late referral and maternal mortality at Dr. M. Djamil Central General Hospital Padang.

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